

REMARKS

Claims 1 - 25 are pending in this Application. No amendments to the Claims are submitted herein.

In the Final Office Action, the Examiner has rejected the Claims as follows:

- (a) Claims 1 - 15, 19 - 21 and 25 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 2,717,867 issued September 13, 1955 to Jewell et. al.;
- (b) Claim 18 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Jewell et. al.; and
- (c) Claims 1, 16, 17 and 22 - 24 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 2,895,906 issued July 21, 1959 to Harper.

It is respectfully submitted that these rejections of the Examiner are overcome by the remarks that follow.

Independent Claim 1

Independent Claim 1 is as follows (underlining and bolding added):

1. A process for converting a liquid feed material into a vapor phase product comprising the following steps:
 - (a) **providing a fluid bed comprising solid particles and a fluidizing medium**, wherein the fluidizing medium is moving in a substantially vertical fluidizing direction and wherein the solid particles are at a

conversion temperature which is suitable for facilitating the conversion of the liquid feed material to the vapor phase product;

- (b) moving the solid particles in a substantially horizontal solid transport direction from an upstream horizontal position to a downstream horizontal position;
- (c) introducing the liquid feed material to the fluid bed at a feed zone located between the upstream horizontal position and the downstream horizontal position in order to facilitate the conversion of the liquid feed material into the vapor phase product; and
- (d) collecting the vapor phase product.

U.S. Patent No. 2,717,867 (Jewell et. al.)

Jewell et. al. is directed at converting a hydrocarbon oil into a coke product and one or more volatile products.

To this end, Jewell et. al. does provide a fluid bed (21) in a drum (19). The fluid bed (21) comprises coke particles and a fluidizing medium which is supplied to the fluid bed (21) by a distribution plate (20). The fluidizing medium appears to move in a substantially vertical fluidizing direction and the coke particles are described as moving generally laterally (i.e., horizontally) between an upstream position (31) and a downstream position (32).

Jewell et al. further discloses a preliminary “mixing and vaporizing zone” (i.e., before the fluid bed (21)) in which preheated oil is contacted with hot finely divided coke particles under conditions such that the relatively vaporizable portion of the oil is rapidly vaporized and the unvaporizable portion is substantially completely absorbed by the hot coke particles “prior to

discharge of the resulting mixture into drum (19) at a point from which the coke particles may settle onto the fluidized bed of coke.” (see column 3, line 35 to column 5, line 24 of Jewell et. al.).

The mixing of the hot oil and the coke particles in the mixing and vaporizing zone may be assisted by introducing an “extraneous gas” into the mixing section via tangential inlets (30), which produce a swirling movement of the coke particles and the oil droplets (see column 4, lines 34-47 of Jewell et. al.). Referring to Figure 3 of Jewell et. al., the tangential inlets (30) are oriented horizontally, and NOT vertically.

As a result, Jewell et. al. is effectively directed at a two-stage process. In the first stage, the oil is mixed with hot aerated coke particles to vaporize volatile portions of the oil and to cause the unvaporizable portions of the oil to be absorbed by the coke particles, thereby producing “dry” coke particles (see column 3, lines 42-48 of Jewell et. al.). In the second stage, the “dry” coke particles are precipitated upon the fluid bed (21) (see column 5, lines 21-24 of Jewell et. al.).

The fluid bed (21) in Jewell et. al. is generally analogous to the fluid bed in the Applicant’s independent Claim 1.

The mixing and vaporizing zone in Jewell et. al. is NOT analogous to the fluid bed in the Applicant’s independent Claim1 because: (a) the mixing and vaporizing zone in Jewell et. al. does not cause the coke particles to move in a substantially horizontal solid transport direction within the mixing and vaporizing zone; (b) the optional “extraneous gas” which is introduced to the mixing and vaporizing zone via inlets (30) is not moving in a substantially vertical fluidizing direction; and (c) the oil which is introduced to the mixing and vaporizing zone in Jewell et. al. is not introduced at a feed zone located between an upstream horizontal position and a downstream horizontal position in the mixing and vaporizing zone.

Jewell et. al. clearly does NOT teach, suggest or contemplate the following

limitations contained in the Applicant's independent Claim 1:

1. **“introducing the liquid feed material [i.e., “hydrocarbon oil” in Jewell et. al.] to the fluid bed...”** – instead, Jewell et. al. explicitly teaches mixing coke particles and hydrocarbon oil at a point substantially ABOVE the upper surface of the fluid bed (21) in the mixing and vaporizing zone which is located at the upstream position (31) (see column 3, line 35 to column 4, line 46 of Jewell et. al.). Furthermore, Jewell et. al. states that it is preferred that: “substantially no unabsorbed liquid oil be precipitated onto the surface (21) of the coke bed” (see column 3, lines 58-63 and column 4, lines 53-58 of Jewell et. al.). As a result, only “dry” coke particles and NOT liquid feed material are introduced to the fluid bed (21) in Jewell et. al., whereas in the Applicant's independent Claim 1 the liquid feed material is introduced directly to the fluid bed, thereby providing “wet” solid particles in the fluid bed; and
2. **“introducing the liquid feed material [i.e., “hydrocarbon oil” in Jewell et. al.] to the fluid bed at a feed zone located between the upstream horizontal position and the downstream horizontal position...”** – instead, Jewell et. al. explicitly teaches introducing both the liquid feed material and the coke particles into the mixing and vaporizing zone which is located AT the upstream horizontal position (31), followed by introduction of the dry coke particles to the fluid bed (21) at the upstream horizontal position (31) (see column 3, lines 35-41 and column 4, lines 34-47 of Jewell et. al.).

It is therefore respectfully submitted that Claim 1 is not anticipated by Jewell et. al..

It is well known that to anticipate a Claim, the reference must teach each element of the Claim. A Claim is anticipated only if each and every element as set forth in the Claim is found, either expressly or inherently described, in a single prior art reference (*Verdegaal Bros. v. Union Oil Company of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

As noted in the above discussion, Jewell et. al. does not anticipate the claimed invention. If the Examiner continues to maintain this ground of rejection, it is respectfully requested that he cite the column and line numbers in Jewell et. al. where the anticipating disclosure exists.

U.S. Patent No. 2,895,906 (Harper)

Harper is directed at the catalytic conversion of reactants by contacting a feed stream such as a gas oil with a mass of fluidized solids which circulate in a cyclical manner through separate contacting zones (19, 20, 21, 22, 23) in a unitary contacting chamber.

A single fluid stream is introduced into each of the contacting zones (19, 20, 21, 22, 23). Only steam is introduced into energizing zone (19). Only the feed stream (i.e., gas oil) is introduced into reaction zone (20). Only steam is introduced into first stripping zone (21). Only air is introduced into regeneration zone (22). Only steam is introduced into second stripping zone (23). As a result, in Harper, there is no contacting zone (19, 20, 21, 22, 23) in which BOTH the feed stream and a fluidizing medium is introduced into the contacting chamber.

The mass of solids is continuously retained and circulated in the contacting chamber so that the mass of solids passes sequentially and continuously through contacting zones (19, 20, 21, 22, 23), from contacting zone (23) back to contacting zone (19), and so on.

Harper clearly does NOT teach, suggest or contemplate the following limitation contained in the Applicant's independent Claim 1:

1. **“providing a fluid bed comprising solid particles and a fluidizing medium” and “introducing the liquid feed material [i.e., “gas oil” in Harper] to the fluid bed at a feed zone...”** – instead, the liquid feed material in Harper is introduced to the solid particles in the reaction zone (20) where no fluidizing medium is present, so that the liquid feed material is NOT introduced to a fluid bed comprising solid

particles and a fluidizing medium (see column 5, lines 50-54 of Harper). As discussed during the Examiner's Interview on July 8, 2008, any fluidization of the solid particles in the reaction zone (20) in Harper results from gases produced by the reaction of the liquid feed material and NOT by the introduction of a fluidizing medium into the reaction zone (20). As a result, the liquid feed material in Harper is effectively introduced to an "unfluidized" bed of solid particles which subsequently becomes fluidized by reaction of the introduced feed material.

It is therefore respectfully submitted that Claim 1 is not anticipated by Harper.

It is well known that to anticipate a Claim, the reference must teach each element of the Claim. A Claim is anticipated only if each and every element as set forth in the Claim is found, either expressly or inherently described, in a single prior art reference (*Verdegaal Bros. v. Union Oil Company of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

As noted in the above discussion, Harper does not anticipate the claimed invention. If the Examiner continues to maintain this ground of rejection, it is respectfully requested that he cite the column and line numbers in Harper where the anticipating disclosure exists.

Summary

In summary, it is respectfully submitted that neither Jewell et. al. nor Harper anticipates independent Claim 1. It is therefore respectfully submitted that independent Claim 1 is allowable and allowance of Claim 1 is respectfully requested.

Dependent Claims 2 - 25 depend directly or indirectly from independent Claim 1. It is respectfully submitted that these dependent Claims are allowable for the distinctions defined therein as well as for the reasons supporting the allowability of Claim 1. Accordingly, allowance of dependent Claims 2 - 25 is also respectfully requested.

In view of the foregoing remarks, it is submitted that this Application is in condition for allowance and allowance of all of Claims 1 - 25 is respectfully requested.

Respectfully submitted,
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